IN THE CLAIMS:

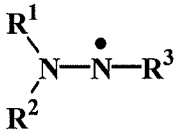
The text of all pending claims, (including withdrawn claims) is set forth below. Cancelled and not entered claims are indicated with claim number and status only. The claims as listed below show added text with underlining and deleted text with ~~strikethrough~~. The status of each claim is indicated with one of (original), (currently amended), (cancelled), (withdrawn), (new), (previously presented), or (not entered).

Please Cancel claims 1-27 and ADD new claims 28-52 in accordance with the following:

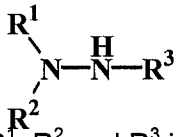
1-27 (cancelled).

28. (**new**): A method for producing a chemical compound, comprising contacting a substrate with molecular oxygen in the presence of an oxidation catalyst, thereby performing an oxidation reaction to form the chemical compound,

said oxidation catalyst comprising at least one member selected from the group consisting of a hydrazyl radical represented by the formula (1) below and a hydrazine compound represented by the formula (2) below,



(1) , and

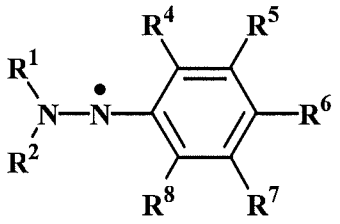


(2)

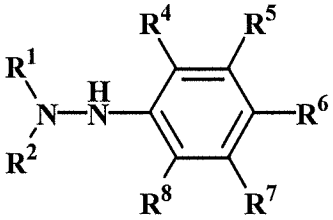
wherein each of R^1, R^2 and R^3 independently represents an aliphatic group, an aromatic group, a halogen atom, a hydroxyl group, a nitro group, a nitroso group, a cyano group, an amino group, an imino group, an azo group, a carbonyl group, a carboxyl group, an acyl group, an alkoxycarbonyl group, an aryloxycarbonyl group, a carbamoyl group, an alkoxyl group, an aryloxy group, a haloalkyl group, a mercapto group, an alkylthio group, an arylthio group, a sulfo group, a sulfinyl group, a sulfonyl group or a heterocyclic group, or alternatively a group having two or more of these atom and groups; and

wherein two substituents selected from the group consisting of R^1, R^2 and R^3 are optionally bonded to each other, to thereby form a ring.

29. (**new**): The method according to claim 28, wherein said hydrazyl radical and said hydrazine compound are, respectively, represented by the following formulae (3) and (4):



(3) , and



(4)

wherein each of R^4, R^5, R^6, R^7 and R^8 independently represents a hydrogen atom, an aliphatic group, an aromatic group, a halogen atom, a hydroxyl group, a nitro group, a nitroso group, a cyano group, an amino group, an imino group, an azo group, a carbonyl group, a carboxyl group, an acyl group, an alkoxycarbonyl group, an aryloxycarbonyl group, a carbamoyl group, an alkoxyl group, an aryloxy group, a haloalkyl group, a mercapto group, an alkylthio group, an arylthio group, a sulfo group, a sulfinyl group, a sulfonyl group or a heterocyclic group, or alternatively a group having two or more of these atoms and groups;

each of R^1 and R^2 has the same definition as each of R^4 to R^8 except that at least one of of R^1 and R^2 does not represent a hydrogen atom; and

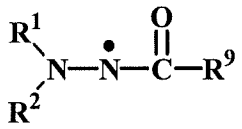
wherein R^1 and R^2 are optionally bonded to each other, to thereby form a ring, and wherein with respect to one or two pairs of substituents selected from the group consisting of a pair of substituents R^4 and R^5, a pair of substituents R^5 and R^6, a pair of substituents R^6 and R^7 and a pair of substituents R^7 and R^8, the substituents of the pair or of each pair are optionally bonded to each other, to thereby form a ring or two rings.

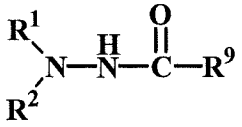
30. (**new**): The method according to claim 28, wherein said hydrazyl radical is selected from the group consisting of 2,2-diphenyl-1-picrylhydrazyl, 2,2-diphenyl-1-(2,6-dinitro-4-fluoromethylphenyl)hydrazyl, 2,2-diphenyl-1-(4-cyano-2,6-dinitrophenyl)hydrazyl, N,N-diphenyl-N'-(2,4,6-tricyanophenyl)hydrazyl, 1,3,5-tris(N,N-diphenylhydrazyl)-2,4,6-tricyanobenzol, 2,2-di-(4-tert-octylphenyl)picrylhydrazyl, carbazol-9-yl(2,4,6-trinitrophenyl) amidogen and N-phenyl-N-(4-trifluoromethylphenyl)-N'-(2,4,6-trinitrophenyl)hydrazyl, and

said hydrazine compound is selected from the group consisting of 2,2-diphenyl-1-picrylhydrazine, 2,2-diphenyl-1-(2,6-dinitro-4-fluoromethylphenyl)hydrazine, 2,2-diphenyl-1-(4-cyano-2,6-dinitrophenyl)hydrazine, N,N-diphenyl-N'-(2,4,6-tricyanophenyl)hydrazine, 1,3,5-tris(N,N-diphenylhydrazino)-2,4,6-tricyanobenzol, 2,2-di-(4-tert-octylphenyl)picrylhydrazine, carbazol-9-yl(2,4,6-trinitrophenyl)amine and N-phenyl-N-(4-trifluoromethylphenyl)-N'-(2,4,6-trinitrophenyl)hydrazine.

31. (**new**): The method according to claim 28, wherein said hydrazyl radical is 2,2-diphenyl-1-picrylhydrazyl, and said hydrazine compound is 2,2-diphenyl-1-picrylhydrazine.

32. (**new**): The method according to claim 28, wherein said hydrazyl radical and said hydrazine compound are, respectively, represented by the following formulae (5) and (6):


(5) , and


(6)

wherein each of R^1, R^2 and R^9 independently represents an aliphatic group, an aromatic group, a halogen atom, a hydroxyl group, a nitro group, a nitroso group, a cyano group, an amino group, an imino group, an azo group, a carbonyl group, a carboxyl group, an acyl group, an alkoxycarbonyl group, an aryloxycarbonyl group, a carbamoyl group, an alkoxyl group, an aryloxy group, a haloalkyl group, a mercapto group, an alkylthio group, an arylthio group, a sulfo group, a sulfinyl group, a sulfonyl group or a heterocyclic group, or alternatively a group having two or more of these atom and groups; and

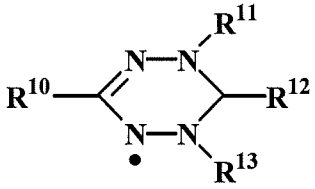
wherein two substituents selected from the group consisting of R^1, R^2 and R^9 are optionally bonded to each other, to thereby form a ring.

33. (**new**): The method according to claim 28, wherein

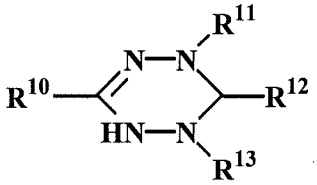
said hydrazyl radical is selected from the group consisting of 1-phenylpyrazolidone-(3)-radical and 3,4-dihydro-1,4-dioxo-3-phenyl-2-phthalazinyl, and

said hydrazine compound is selected from the group consisting of 1-phenylpyrazolidine-3-one, 1-phenyl-1,2-dihydropyridazine-3,6-dione and 2-phenyl-2,3-dihydrophthalazine-1,4-dione.

34. (**new**): The method according to claim 28, wherein said hydrazyl radical and said hydrazine compound are, respectively, represented by the following formulae (7) and (8):



(7) , and



(8)

wherein each of R^{10}, R^{11} and R^{12} independently represents a hydrogen atom, an oxygen atom, a sulfur atom, an aliphatic group, an aromatic group, a halogen atom, a hydroxyl group, a nitro group, a nitroso group, a cyano group, an amino group, an imino group, an azo group, a carbonyl group, a carboxyl group, an acyl group, an alkoxycarbonyl group, an aryloxycarbonyl group, a carbamoyl group, an alkoxyl group, an aryloxy group, a haloalkyl group, a mercapto group, an alkylthio group, an arylthio group, a sulfo group, a sulfinyl group, a sulfonyl group or a heterocyclic group, or alternatively a group having two or more of these atoms and groups;

R^{13} has the same definition as each of R^{10} to R^{12} except that R^{13} does not represent a hydrogen atom; and

wherein two substituents selected from the group consisting of R^{11}, R^{12} and R^{13} are optionally bonded to each other, to thereby form a ring.

35. (**new**): The method according to claim 28, wherein

said hydrazyl radical is selected from the group consisting of 2,4,6-triphenyl-3,4-dihydro-2H-[1,2,4,5]tetrazine-1-yl, 1,3,5,6-tetraphenylverdazyl, 1,3,5-triphenyl-6-oxoverdazyl and 1,3,5-triphenyl-6-thioxoverdazyl, and

said hydrazine compound is selected from the group consisting of 2,4,6-triphenyl-1,2,3,4-tetrahydro-[1,2,3,4]tetrazine, 2,3,4,6-tetraphenyl-1,2,3,4-tetrahydro-[1,2,4,5]tetrazine, 1,3,5-triphenyl-6-oxotetrazine and 1,3,5-triphenyl-6-thioxotetrazine.

36. (**new**): The method according to claim 28, wherein said oxidation catalyst further comprises an oxidation promoter, and said oxidation promoter is used in an amount of from 0.00005 to 0.8 mole per mole of said substrate.

37. (**new**): The method according to claim 36, wherein said oxidation promoter is a transition metal compound.

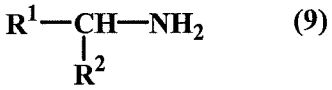
38. (**new**): The method according to claim 37, wherein said transition metal is at least one member selected from the group consisting of elements of Groups 3 to 12 of the Periodic Table.

39. (**new**): The method according to claim 38, wherein said transition metal is at least one member selected from the group consisting of lanthanoids, Ti, Zr, Hf, V, Nb, Ta, Cr, Mo, W, Mn, Re, Fe, Ru, Os, Co, Rh, Ir, Ni, Pd, Pt, Cu, Ag, Au, Zn and Cd.

40. (**new**): The method according to claim 28, wherein said substrate is selected from the group consisting of a hydrocarbon, an alcohol, a carbonyl compound, an ether, an amine, a sulfur compound and a heterocyclic compound.

41. (**new**): The method according to claim 40, wherein said amine is a primary amine, and said chemical compound produced is an oxime compound or a nitro compound.

42. (**new**): The method according to claim 41, wherein said primary amine is represented by the following formula (9):



(9)

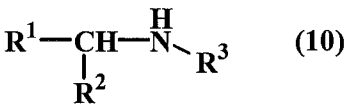
wherein each of R^1 and R^2 independently represents a hydrogen atom, an aliphatic group, an aromatic group or an aralkyl group, provided that R^1 and R^2 are not simultaneously hydrogen atoms; and

wherein R^1 and R^2 are optionally bonded to each other, to thereby form a ring.

43. (**new**): The method according to claim 42, wherein said primary amine is cyclohexylamine, and said chemical compound produced is cyclohexanone oxime.

44. (**new**): The method according to claim 40, wherein said amine is a secondary amine, and said chemical compound produced is a nitrone compound.

45. (**new**): The method according to claim 44, wherein said secondary amine is represented by the following formula (10):



(10)

wherein each of R^1 and R^2 independently represents a hydrogen atom, an aliphatic group, an aromatic group or an aralkyl group, and R^3 has the same definition as each of R^1 and R^2 except that R^3 does not represent a hydrogen atom; and

wherein two substituents selected from the group consisting of R^1, R^2 and R^3 are optionally bonded to each other, to thereby form a ring.

46. (**new**): The method according to claim 28, wherein said oxidation reaction is either performed in at least one reaction medium selected from the group consisting of water and an organic solvent, or performed using said substrate as a reaction medium.

47. (**new**): The method according to claim 46, wherein said organic solvent is an aprotic solvent.

48. (**new**): The method according to claim 47, wherein said aprotic solvent is at least one member selected from the group consisting of a nitrile, a nitro compound, an ester, an ether and an amide.

49. (**new**): The method according to claim 48, wherein said nitrile is at least one member selected from the group consisting of acetonitrile and benzonitrile.

50. (**new**): The method according to claim 48, wherein said amide is at least one member selected from the group consisting of dimethylformamide and dimethylacetamide.

51. (**new**): The method according to claim 28, wherein said at least one compound selected from the group consisting of the hydrazyl radical and the hydrazine compound is used in an amount of from 0.0001 to 1 mole per mole of said substrate.

52. (**new**): The method according to claim 28, wherein said oxidation reaction is performed under reaction conditions wherein the temperature is from 0 to 200 °C and the pressure is from atmospheric pressure to 20 MPa.